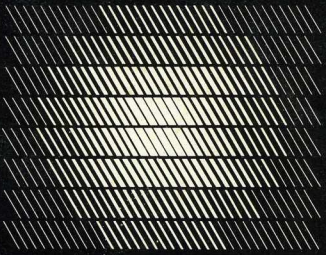
VideoBrain™

# Home Computer Accessory Owner's Handbook



Accessory: **Expander 2**

For best results,
read this brochure before
using cartridge

VideoBrain™

# EXPANDER 2

OWNER'S HANDBOOK

Accessory

- Acoustic coupler

VideoBrain Computer Company
2950 Patrick Henry Drive
Santa Clara, California 95050

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## Expander 2 Introduction

Expander 2 data modems are designed for acoustic operation via the switched telephone network or private line installation. Acoustically coupled with most telephone sets, the Expander 2 offers a reliable and convenient method of data transmission.

Expander 2 is an originate-only modem for up to 300 baud operation.

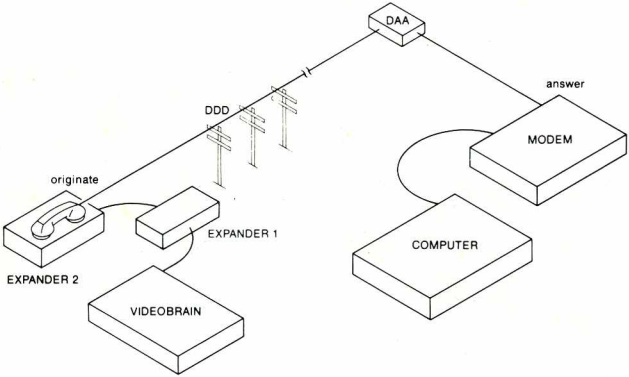


FIG. 1

## Controls and Indicators

Following are the controls and indicators found on the coupler.

Front Panel

1. Full/Half: this switch sets the duplex (communication) mode of the Expander 2 unit. For half duplex operation (local copy back), push the switch in. Full duplex (no copy back) is when the switch is out.

   Note: before operating in half duplex mode, make sure that the system or the terminal does not provide a local copy back. If so, leave switch in full duplex.

2. PWR: this indicator shows that AC power is applied to Expander 2.
3. CTS: this indicator shows that a valid carrier signal is being received from the opposite receiving modem.

Rear Panel

1. On/Off: this switch applies AC power to Expander 2.
2. 115 VAC 60 Hz Only: this grounded 3-wire cord plugs into any 3-wire 115 VAC 60 Hz receptacle.
3. EIA RS232-C: the 25-pin connector is the standard EIA RS232-C interface. Plug cable from the Expander 1 right into this connector.

## Installation

### AC Power Connection

Expander 2 is provided with a 3-wire power cord which can be connected to any 115 VAC 60 Hz grounded wall outlet. Apply power through this cable.

### EIA Connection

Plug the supplied EIA cable into the 25-pin EIA connector in the back of Expander 1 as shown below. Pin connections and levels conform to the EIA RS232-C specifications. See the interface chart for Expander 2.

Plug the other end of the EIA cable into the rear panel of VideoBrain's Expander 1 (Input/Output interface). The modem plug is appropriately labeled on the back panel of Expander 1, as shown in its Owner's Handbook.

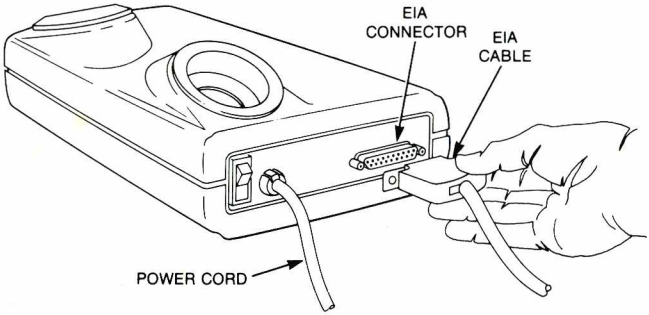


FIG 2.

## Expander 2 Location

For operation, locate a place for Expander 2 close enough to the telephone so the handset cord can easily reach Expander 2. Avoid places such as on top of a terminal, TV set, air conditioner, etc. Some of this equipment can generate electrical or magnetic fields which may cause transmission errors.

## Operating Procedures

The following is a detailed sequence on how to operate Expander 2 in a typical timesharing environment. Insert Timeshare (CM01) cartridge in the VideoBrain.

## Placing a call

1. Turn the AC power switch on. Check that the PWR indicator illuminates.
2. Choose the proper setting for the Full/Half duplex switch.
3. Dial the number of the desired computer or remote station.
4. Listen until the high-pitched carrier tone is heard from the computer or the remote station.
5. Place telephone handset in acoustic coupler, with cord to the rear.
6. Check to ensure that the CTS indicator lights up after one or two seconds. When this indicator is on, the exchange of data can begin.

## Disconnecting a call

When exchanging data with a computer system, simply sign off from the system and the computer will disconnect your call.

At any time a disconnect can be accomplished by any of the two parties by removing the handset and putting it back in the cradle on the telephone, thereby disconnecting the line.

## Specifications

| | | | |
|---|---|---|---|
| Data Rate: | 300 baud | | |
| Modulation: | Phase coherent FSK | | |
| Operation: | Asynchronous, serial by bit | | |
| Telephone Interface: | Acoustical via the WE 500 handset or equivalent | | |
| Audio Data Frequencies: | | Receive | Transmit |
| | Mark | 2225 Hz | 1270 Hz |
| | Space | 2025 Hz | 1070 Hz |
| Tolerance: | | ±6 Hz | ±2 Hz |
| Receive Performance: | Less than 5% jitter and 10% bias distortion operating at 300 baud | | |

| | |
|---|---|
| Receive Sensitivity: | Acoustic mode −48 dBm ±3 dB, max hysteresis is 4 dB |
| Transmit Level: | Pot adjustable −15 to −21 dBm |
| Timings: | Carrier detect —<br>on 500 ms ±200 ms<br>off 50 ms ±30 ms<br>Clear to send —<br>on 700 ms ±300 ms<br>off 2 ms |
| Power Requirements: | 115 VAC ±10%, 60 Hz, 5 W |
| Environmental: | Operating temperature 0°C to 60°C<br>Storage temperature −20°C to 70°C<br>Relative humidity 8% to 95% relative |
| Dimensions: | 3¾" high<br>7½" wide<br>10½" long |
| Indicators: | CTS — Received carrier/clear to send<br>PWR — Power on |
| Controls: | ON/OFF — Power on/off<br>FULL/HALF — Duplex |
| Interfaces: | EIA RS232-C |

## Interfaces

| Desig. | EIA RS232-C | Pin Number |
|---|---|---|
| AA | Protective Ground | 1 |
| BA | Transmit Data | 2 |
| BB | Receive Data | 3 |
| CB | Clear to Send | 5 |
| CC | Data Set Ready | 6 |
| AB | Signal Ground | 7 |
| CF | Received Line Detector | 8 |
| +P | Positive Voltage | 9 (test only) |
| −P | Negative Voltage | 10 (test only) |
| CD | Data Terminal Ready | 20 (optional) |

## Maintenance

The Expander 2 Acoustic Coupler is designed and manufactured for long, trouble-free usage. However, if any problem should occur, the following chart could help the operator to diagnose a problem.

**DIAGNOSTIC CHART**

| Malfunction: | Check: |
|---|---|
| PWR indicator does not illuminate | Is the power cord plugged into an active outlet?<br>Is the power switch on? |
| CTS indicator does not illuminate | Check for tone from handset.<br>Is handset properly inserted in cups?<br>Check with the computer facility to be sure the system is set-up for WE 103/113 line protocol 011. |
| Double characters, errors, or no data exchange at all | If the Full/Half duplex switch is in Half duplex, switch to Full duplex.<br>Check the compatibility between the terminals and the computer system; i.e., data rate, character code, etc.<br>Check that the timesharing service is operating properly.<br>Check that all cables are securely connected. |

Expander 2 is used with many exciting VideoBrain cartridges brought to you by the VideoBrain Computer Company. We suggest you try all the VideoBrain Cartridges to help you around the home, educate your children and entertain the whole family.

**Money Management**

APL/S The Computational Language*
VB-81 Financier™
VB-1000 Money Minder*
VB-1200 Information Manager*

**Communications**

CM01 Timeshare**

**Education**

ED01 Music Teacher 1
ED02 Math Tutor 1
ED03 Wordwise™ 1
ED04 Wordwise™ 2
ED05 VideoArtist™
ED06 Lemonade Stand—A Business Simulation
ED07 Musicanship 1
ED09 Historical Simulation—France in the Old Regime

**Entertainment**

EN01 Gladiator
EN02 Pinball
EN03 Tennis
EN04 Checkers
EN05 Blackjack
EN06 Vice Versa™
EN10 Computer Life

*use with Expander 1
**use with Expander 2

## Limited Warranty

For 12 months from date of purchase, VideoBrain Computer Company will repair free of charge any defect of material and workmanship in the Accessory electronic circuitry.

For 90 days from the date of purchase, VideoBrain Computer Company will repair any case or cable defect in material or workmanship in this Accessory free of charge.

To obtain warranty service, return the Accessory postpaid, with sales receipt showing date of purchase, to the VideoBrain Service Center with address shown below.

Under no circumstances will VideoBrain Computer Company be liable for any special, incidental or consequential damages resulting from use or possession of the VideoBrain or its accessories. However, some states do not allow the exclusion or limitation of incidental or consequential damages, so that the above limitations or exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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